

641—15.51(135I) Spa operations. A spa shall be operated in a safe, sanitary manner and shall meet the following operational standards.

15.51(1) Filtration and recirculation.

a. Filters. A spa shall have a filtration system in good working condition which provides water clarity in compliance with the water quality standards of subrule 15.51(2).

(1) Each filter cartridge shall be replaced with a new, unused, or cleaned and disinfected filter cartridge in accordance with the manufacturer's recommendations for pressure rise at the inlet of the filter, but at least once a month. If a functioning pressure gauge is not present at the filter inlet, the filter cartridge(s) shall be replaced whenever the spa is drained and at least every two weeks. Filter cartridge replacements shall be recorded in the spa records.

(2) Each sand filter serving a spa shall be opened at least annually and the sand media examined for grease buildup, channeling and other deficiencies. The sand shall be cleaned and disinfected before the filter is put back into service. The annual inspection shall be recorded in the spa records.

(3) Each diatomaceous earth filter serving a spa shall be dismantled, and the filter socks and the interior of the filter shall be cleaned and disinfected at least annually. The annual cleaning shall be recorded in the spa records.

(4) The recirculation system shall have an operating pressure gauge located in front of the filter if it is a pressure filter system. A vacuum filter system shall have a vacuum gauge located between the filter and the pump.

b. The recirculation system for a spa shall treat one spa volume of water in 30 minutes or less.

c. Continuous operation required. Pumps, filters, disinfectant feeders, flow indicators, gauges, and all related components of the spa water recirculation system shall be operated continuously whenever the spa contains water, except for cleaning or servicing.

d. Inlets. The recirculation system shall have inlets adequate in design, number, location, and spacing to ensure effective distribution of treated water and maintenance of uniform disinfectant residual throughout the spa.

e. Skimmers. A spa shall have at least one skimmer.

(1) Each skimmer shall have a self-adjusting weir in place and operational.

(2) Each skimmer shall have an easily removable basket or screen upstream from any valve.

f. Wastewater. Wastewater and backwash water from a spa shall be discharged through an air break or an air gap.

g. Water supply. The water supplied to a spa shall be from a water supply meeting the requirements of the department of natural resources for potable water.

(1) Water supplied to a spa shall be discharged to the spa system through an air gap or a reduced-pressure principle backflow device meeting AWWA C-511-97, "Reduced-Pressure Principle Backflow-Prevention Assembly."

(2) Each hose bib at a facility shall be equipped with an atmospheric vacuum breaker or a hose connection backflow preventer.

h. Spa water heaters.

(1) Electric water heaters shall bear the seal of UL.

(2) Gas-fired water heaters shall bear the seal of the AGA and shall be equipped with a pressure relief valve.

(3) Fuel-burning water heaters shall be vented to the outside, in accordance with the Iowa state plumbing code.

(4) Each indoor swimming pool equipment room with fuel-burning water heating equipment shall have one or more openings to the outside of the room for the provision of combustion air.

15.51(2) Water quality and testing.

a. Disinfection.

(1) Spa water shall have a free chlorine residual of at least 2.0 ppm and no greater than 8.0 ppm, or a total bromine residual of at least 4.0 ppm and no greater than 18 ppm when the spa is open for use, except as given in Table 12.

(2) A spa shall be closed if the free chlorine is measured to be less than 1.0 ppm or the total bromine is measured to be less than 2.0 ppm.

(3) The spa shall be closed if a free chlorine measurement exceeds 8.0 ppm or if the total bromine measurement exceeds 18 ppm, except as given in Table 12.

(4) If an ORP controller with a readout meeting the requirements of 15.51(2)“f”(4) is installed on the spa system, the spa water shall have an ORP of at least 700 mV, but no greater than 880 mV, except as given in Table 12. The spa shall be closed if the ORP is less than 650 mV or greater than 880 mV.

(5) The spa shall be closed if the cyanuric acid concentration in the spa water exceeds 80 ppm. The spa may be reopened when the cyanuric acid concentration is 40 ppm or less.

(6) No cyanuric acid shall be added to an indoor spa after May 4, 2005, except through an existing chemical feed system designed to deliver di-chlor or tri-chlor. No cyanuric acid in any form shall be added to an indoor spa after June 30, 2008.

Table 12

Preferred Operating Range			Acceptable Operating Range		
ORP (mV)	Free Cl (ppm)	Total Br (ppm)	ORP (mV)	Free Cl (ppm)	Total Br (ppm)
700-880	2.0-8.0	4.0-18.0	700-880	1.0-1.8	2.0-3.5
			650-700 [#]	2.0-8.0	4.0-18.0
			650-700 [†]	8.2-10.0	18.5-22.0

[#] If these conditions occur on any 3 consecutive days or on any 5 days within a 7-day period, and the conditions reoccur after the spa is drained and cleaned, the facility management shall evaluate water parameters including, but not limited to, cyanuric acid, pH, combined chlorine, and phosphates (ortho- and total); and other conditions at the spa. The facility management shall modify parameters and conditions as practical to bring the ORP to a minimum of 700 mV. The evaluation shall be completed within 30 days after the low ORP condition is known to the facility management. A written report of the evaluation shall be kept with the spa records.

[†] If these conditions occur on any 2 consecutive days or on any 4 days within a 7-day period, the facility management shall drain and clean the spa and notify the inspection agency. If the conditions reoccur after the spa is drained and cleaned, the facility management shall cause the conditions at the spa specified in the previous footnote and the function of the ORP equipment to be investigated by a professional pool service company. A written report detailing source water parameters, spa water parameters, spa design (including information about the installed mechanical and chemical equipment), other conditions affecting the disinfectant concentration and the ORP, and the actions taken to increase ORP relative to the disinfectant residual shall be submitted to the local inspection agency within 30 days after the low ORP condition is known to the facility management.

b. pH level. The pH of spa water shall be 7.2 to 7.8.

c. Water clarity. A spa shall be closed if the grate openings on drain fittings at or near the bottom of the spa are not clearly visible when the agitation system is off.

d. Bacteria detection.

(1) If coliform or *Pseudomonas aeruginosa* bacteria are detected in a sample taken in accordance with 15.51(2)“e”(8), the spa shall be drained, cleaned, and disinfected. The spa may reopen, and a check sample shall be taken when the spa water meets the requirements of paragraphs “a,” “b” and “c” above. If coliform or *Pseudomonas aeruginosa* bacteria are detected in the check sample, the spa shall be closed. The spa shall be drained, physically cleaned, and disinfected. The filter(s) shall be cleaned and disinfected.

1. For cartridge filters, the cartridge shall be replaced with a new, unused cartridge or a cleaned, disinfected cartridge; the filter housing shall be physically cleaned, then disinfected.

2. For sand and DE filters, the filter shall be opened and the media and components cleaned and disinfected.

The spa may reopen when no coliform or *Pseudomonas aeruginosa* bacteria are detected in a spa water sample taken when the spa water meets the requirements of paragraphs “a,” “b” and “c” above.

(2) The facility management shall notify the local inspection agency of the positive bacteriological result within one business day after the facility management has become aware of the result.

e. Test frequency. The results of the tests required below shall be recorded in the spa records.

(1) The disinfectant residual in the spa water shall be tested or the ORP of the spa water shall be checked each day before the spa is opened for use and at intervals not to exceed two hours thereafter

until the spa closing time. For a spa at a condominium complex, an apartment building or a homeowners association with 25 or fewer living units, the disinfectant level in the spa water shall be tested or the ORP of the spa water shall be checked at least twice each day the spa is available for use.

If the spa is equipped with an automatic controller with a readout or local printout of ORP complying with the requirements of 15.51(2) "f"(4), the operator may make visual readings of ORP in lieu of manual testing, but the spa water shall be tested manually for disinfectant residual at least twice per day. Both ORP and disinfectant residual shall be recorded when manual testing is done. The operator shall specify in the spa records which results are from the manual tests.

(2) The pH of the spa water shall be tested each day before the spa is opened for use and at intervals not to exceed two hours thereafter until the spa closing time. For a spa at a condominium complex, an apartment building or a homeowners association with 25 or fewer living units, the pH of the spa water shall be tested at least twice each day the spa is available for use.

If the spa is equipped with an automatic controller with a readout or local printout of pH complying with the requirements of 15.51(2) "f"(5), the operator may make visual readings of pH in lieu of manual testing, but the spa water shall be tested manually for pH at least twice per day. The operator shall specify in the spa records which results are from the manual tests.

(3) The spa water temperature shall be measured whenever a manual test of the spa water is performed.

(4) If a chlorine compound is used for disinfection, the spa water shall be tested for combined chlorine at least once a day.

(5) If cyanuric acid or a stabilized chlorine is used in a spa, the spa water shall be tested for cyanuric acid at least once a day.

(6) The spa water shall be tested for total alkalinity each time the spa is refilled and at least once in each week that the spa is open for use.

(7) The spa water shall be tested for calcium hardness each time the spa is refilled.

(8) At least once in each month that a spa is open for use, a sample of the spa water shall be submitted to a laboratory certified by the department of natural resources for the determination of coliform bacteria in drinking water. The sample shall be analyzed for total coliform and *Pseudomonas aeruginosa*.

f. Test equipment.

(1) Each facility shall have functional water testing equipment for free chlorine and combined chlorine, or total bromine; pH; total alkalinity; calcium hardness; and cyanuric acid (if cyanuric acid or a stabilized chlorine is used at the facility).

(2) The test equipment shall provide for the direct measurement of free chlorine and combined chlorine from 0 to 10 ppm in increments of 0.2 ppm or less over the full range, or total bromine from 0 to 20 ppm in increments of 0.5 ppm or less over the full range.

(3) The test equipment shall provide for the measurement of spa water pH from 7.0 to 8.0 with at least five increments in that range.

(4) A controller readout used in lieu of manual disinfectant residual testing shall be a numerical analog or digital display (indicator lights are not acceptable) with an ORP scale with a range of at least 600 to 900 mV with increments of 20 mV or less.

(5) A controller readout used in lieu of manual pH testing shall be a numerical analog or digital display (indicator lights are not acceptable) with a range at least as required in 15.51(2) "f"(3) with increments of 0.2 or less over the full range.

g. Operator availability. A person knowledgeable in testing water and in operating the water treatment equipment shall be available whenever a spa is open for use.

15.51(3) Disinfection systems and cleaning.

a. Disinfectant system.

(1) Equipment for continuous feed of a chlorine or bromine compound to the spa water shall be provided and shall be operational. The equipment shall be adjustable in at least five increments over its feed capacity. Where applicable, the chemical feeder shall be listed by NSF or another listing agency approved by the department for compliance with Standard 50.

(2) The disinfectant equipment shall be capable of providing at least 10 ppm of chlorine or bromine to the spa water based on the recirculation flow rate.

(3) Equipment and piping used to apply any chemicals to the water shall be of such size, design, and material that they may be cleaned. All material used for such equipment and piping shall be resistant to the action of chemicals to be used.

(4) The use of chlorine gas is prohibited.

b. Cleaning and superchlorination.

(1) A spa shall be clean.

(2) A spa containing 500 gal of water or less shall be drained, cleaned and refilled a minimum of once a week. A spa containing over 500 gal to 2000 gal of water shall be drained, cleaned and refilled a minimum of one time every two weeks. A spa with a water volume greater than 2000 gal shall be drained, cleaned and refilled a minimum of one time every three weeks.

The department may permit a longer period between refills for spas over 2000 gal upon evaluation of the use of the spa. Such permission shall be in writing, and a copy shall be available to an inspector upon request.

(3) The inspection agency may require that a spa be drained, cleaned, and superchlorinated prior to further usage.

15.51(4) Safety.

a. Chemical safety.

(1) No disinfectant chemical, pH control chemical, algacide, shock treatment chemical, or any other chemical that is toxic or irritating to humans shall be added to a spa over the top when the spa is occupied. If chemicals are added to the spa over the top, the spa shall not be occupied for a period of at least 30 minutes. The operator shall test the spa water as appropriate before allowing use of the spa. The chemical addition and the test results shall be recorded in the spa records.

(2) Spa chemicals shall be stored and handled in accordance with the manufacturer's recommendations.

(3) Material safety data sheets (MSDS) for the chemicals used in the spa shall be at the facility in a location known and readily accessible to the facility staff.

(4) Chemical containers shall be clearly labeled.

(5) A chemical hazard warning sign shall be placed at the entrance of a room where chemicals are used or stored or where bulk containers are located.

b. Stairs, ladders, recessed steps, and ramps.

(1) When the top rim of a spa is more than 24 inches above the surrounding floor area, stairs or a ramp shall be provided to the top of the spa.

(2) Stairs, ladders, ladder rungs, and ramps shall be slip-resistant.

(3) Where stairs and ramps are provided, they shall be equipped with a handrail.

(4) Ladders and handrails shall be constructed of corrosion-resistant materials or provided with corrosion-resistant coatings. They shall have no exposed sharp edges.

(5) Ladders, handrails and grabrails shall be securely anchored.

c. Water temperature. Water temperature in the spa shall not exceed 104°F. The spa shall be closed if the water temperature exceeds 104°F.

(1) A thermometer shall be available to measure temperatures in the range of 80° to 120°F.

(2) Water temperature controls shall be accessible only to the spa operator.

d. Emergency telephone. Each facility where lifeguards are not provided shall have a designated emergency telephone or equivalent communication system that can be operated without coins. The communication system shall be available to users of the spa whenever the spa is open. If the emergency communication system is not located within the spa enclosure, management shall post a sign(s) indicating the location of the emergency telephone. Instructions for emergency use of the telephone shall be posted near the telephone.

e. Water level. Water level shall be maintained at the skimming level.

f. Outlets below water level. Each outlet that is entirely below the operating water level, including the main drain(s), shall be designed to prevent user entrapment. A spa shall be closed if an outlet cover is missing or broken.

(1) Each pump that draws water directly from a spa shall have two or more outlets or a single outlet with an area of at least 144 in².

(2) Each outlet shall have a cover with openings or slots no more than ½ inch wide. A suction outlet cover shall have an area of at least 144 in² or shall be listed for compliance with ANSI/ASME 112.19.8M-1987 by a listing agency approved by the department.

g. Spa walls and floor shall be smooth and easily cleanable.

h. Decks.

(1) The deck shall have a slip-resistant surface.

(2) The deck shall be clean and free of debris.

(3) A hose bib shall be provided for flushing or cleaning of the deck.

(4) Glass objects, other than eyeglasses and safety glass doors and partitions, shall not be permitted on the deck.

i. There shall be no underwater or overhead projections or obstructions which would endanger user safety or interfere with proper spa operation.

j. Electrical.

(1) Each electrical outlet in the deck, shower room, and pool water treatment equipment areas shall be equipped with a properly installed ground fault circuit interrupter (GFCI) at the outlet or at the breaker serving the outlet. Electrical outlets energized through an ORP/pH controller are not required to have a separate GFCI if the controller is equipped with a GFCI or is energized through a GFCI breaker. Ground fault circuit interrupter receptacles and breakers shall be tested at least once in each month the spa is operating. Test dates and results shall be recorded in the spa records.

(2) There shall be no outlets located on, or within 5 ft of, the inside wall of a spa.

(3) An air switch within reach of persons in the spa and its connecting tube shall be constructed of materials that do not conduct electricity.

(4) Lighting.

1. Artificial lighting shall be provided at all spas which are to be used at night or which do not have adequate natural lighting so all portions of the spa, including the bottom and main drain, may be readily seen.

2. Underwater lights and fixtures shall be designed for their intended use. When the underwater lights operate at more than 15 volts, the underwater light circuit shall be equipped with a GFCI. When underwater lights need to be repaired, the electricity shall be shut off until repairs are completed.

3. No electrical wiring shall extend over an outdoor spa.

k. Fencing.

(1) A spa shall be enclosed by a fence, wall, building, or combination thereof not less than 4 ft high. The spa enclosure shall be constructed of durable materials. A spa may be in the same room or enclosure as another spa or a swimming pool.

(2) A fence, wall, or other means of enclosure shall have no openings that would allow the passage of a 4-inch sphere, and shall not be easily climbable by toddlers. The distance between the ground and the top of the lowest horizontal support accessible from outside the facility, or between the two lowest horizontal supports accessible from outside the facility, shall be at least 45 inches. A horizontal support is considered accessible if it is on the exterior of the fence relative to the spa, or if the gap between the vertical members of the fence is greater than 1¼ inches.

(3) At least one gate or door with an opening of at least 36 inches in width shall be provided for emergency purposes. When closed, gates and doors shall comply with the requirements of (2) above. Gates and doors shall be lockable. Except where lifeguard supervision is provided whenever the spa is open, gates and doors shall be self-closing and self-latching.

(4) If there are sleeping rooms, apartments, condominiums, or permanent recreation areas which are used by children and which open directly into the spa area, the spa shall be enclosed by a barrier at least 3 ft high. No opening in the barrier shall permit the passage of a 4-inch sphere. The barrier shall

not be easily climbable by toddlers. There shall be at least one 36-inch-wide gate or door through the barrier. Gates and doors shall be lockable. Except where lifeguard supervision is provided whenever the spa is open, gates and doors provided shall be self-closing and self-latching.

l. Agitation system control. The agitation system control shall be installed out of the reach of persons in the spa. The “on” cycle for the agitation system shall be no more than ten minutes.

15.51(5) Management, notification, and records.

a. Certified operator required. Each spa facility shall employ a certified operator. One certified operator may be responsible for a maximum of three facilities.

b. Spa rules sign. A “Spa Rules” sign shall be posted near the spa. The sign shall include the following stipulations:

- (1) Persons with a medical condition, including pregnancy, should not use the spa without first consulting with a physician.
- (2) Anyone having a contagious disease shall not use the spa.
- (3) Persons shall not use the spa immediately following exercise or while under the influence of alcohol, narcotics, or other drugs.
- (4) Persons shall not use the spa alone or without supervision.
- (5) Children shall be accompanied by an adult.
- (6) Persons shall not use the spa longer than ten minutes.
- (7) No one shall dive or jump into the spa.
- (8) The maximum patron load of the spa. (The maximum patron load of a spa is one individual per 2 lineal ft of inner edge of seat or bench.)

c. Spa depth. The maximum depth of a spa shall be posted at a conspicuous location near the spa in numerals or letters at least 3 inches high.

d. Glass prohibited. Glass objects other than eyeglasses, safety glass doors, and partitions shall not be permitted in a spa enclosure.

e. Operational records. The operator of a spa shall have the spa operational records for the previous 12 months at the facility and shall make these records available when requested by a swimming pool/spa inspector. These records shall contain a day-by-day account of spa operation, including:

- (1) ORP and pH readings, results of pH, free chlorine or total bromine residual, cyanuric acid (if used), combined chlorine, total alkalinity, and calcium hardness tests, and any other chemical test results.
- (2) Results of microbiological analyses.
- (3) Water temperature measurements.
- (4) Reports of complaints, accidents, injuries, or illnesses.
- (5) Dates and quantities of chemical additions, including resupply of chemical feed systems.
- (6) Dates when filters were backwashed or cleaned or a filter cartridge(s) was changed.
- (7) Draining and cleaning of spa.
- (8) Dates when ground fault circuit interrupter receptacles or circuit breakers were tested.
- (9) Dates of review of material safety data sheets.

f. Submission of records. An inspection agency may require facility management to submit copies of readings of ORP and pH, chemical test results and microbiological analyses to the inspection agency on a monthly basis. The inspection agency shall notify the facility management of this requirement in writing at least 15 days before the reports are to be submitted for the first time. The facility management shall submit the required reports to the inspection agency within 10 days after the end of each month of operation.

g. Operations manual. A permanent manual for operation of a spa shall be at the facility. The manual shall include instructions for routine operations at the spa including, but not necessarily limited to:

- (1) Maintaining the chemical supply for the chemical feed systems.
- (2) Filter backwash or cleaning.
- (3) Water testing procedures, including the required frequency of testing.
- (4) Procedures for draining, cleaning and refilling the spa, including chemical adjustments and controller adjustments.

- (5) Controller sensor maintenance, where applicable.
- (6) Superchlorination.

h. Schematic drawing. A schematic drawing of the spa recirculation system shall be posted in the swimming pool filter room or shall be in the operations manual. Clear labeling of the spa piping with flow direction and water status (unfiltered, treated, backwash) may be substituted for the schematic drawing.

i. Material safety data sheets. Copies of material safety data sheets (MSDS) for the chemicals used at the spa shall be kept at the facility in a location known and readily accessible to facility staff with chemical-handling responsibilities. Each member of the facility staff with chemical-handling responsibilities shall review the MSDS at least annually. The facility management shall retain records of the MSDS reviews at the facility and shall make the records available upon request by a swimming pool inspector.

j. Emergency plans. A written emergency plan shall be provided. The plan shall include, but may not be limited to, actions to be taken in cases of drowning, hyperthermia, serious illness or injury, chemical-handling accidents, weather emergencies, and other serious incidents. The emergency plan shall be reviewed with the facility staff at least once a year, and the dates of review or training shall be recorded. The written emergency plan shall be kept at the facility and shall be available to a swimming pool inspector upon request.

k. Temporary spas.

- (1) A person offering temporary spas for rent shall be a certified operator.
- (2) Records of temporary spas shall be maintained for one year which identify the location of all installations.
- (3) Written operational instructions shall be provided to individuals operating or leasing a spa. The instructions shall be consistent with this chapter and provide guidance in the following areas:
 - 1. Acceptable sources of water supply and procedure for cross-connection control—15.51(1)“g.”
 - 2. Methods for routine cleaning and superchlorination—15.51(3)“b.”
 - 3. Procedures for maintaining prescribed levels of disinfectant residual, pH, total alkalinity, clarity, and microbiological quality, and using the test kit—15.51(2)“a” to 15.51(2)“f.”
 - 4. Procedures for maintaining temperature and operation of temperature controls—15.51(4)“c.”
 - 5. Warning to prevent electrical hazards—15.51(4)“j.”
 - 6. Procedures for operation of filters, including backwashing—15.51(1)“a.”
 - 7. A warning to the renter that the renter should prevent unauthorized or accidental access to a spa when it contains water.

15.51(6) Reports. Spa operators shall report to the local inspection agency, within one working day of occurrence, all deaths; near drowning incidents; head, neck, and spinal cord injuries; and any injury which renders a person unconscious or requires immediate medical attention.